

Remarks

I. Status of claims

Claims 1-25 are pending.

II. Claim rejections under 35 U.S.C. § 101

The Examiner has rejected claims 3, 4, 8, 10, 11, 15-20, and 24 under 35 U.S.C. § 101 as being directed to non-statutory subject matter.

A. Claims 3 and 4

Each of claims 3 and 4 depends from independent claim 1, which has been amended and defines patent-eligible subject matter because it is tied to a “particular machine” (namely, a “processor” that performs the novel/nonobvious elements of the method defined by the claim; see, e.g., ¶¶ 37 and 38). Since the subject matter defined in independent claim 1 is tied to a “particular machine,” it meets the Office’s own particular standard for determining patent-eligible subject matter under 35 U.S.C. § 101. It is noted that the performance of the novel/nonobvious elements of claim 1 by the processor does not constitute a recitation of an incidental physical limitation, such as a data gathering, field of use limitations, or post-solution activity. Instead, the performance of these elements is essential to the claimed method and, therefore, is sufficient to limit the scope of the claim such that it would not wholly pre-empt all uses of an abstract principle (see In re Bilski, __ F.3d __, 2008 WL 4757110, 88 USPQ2d (BNA) 1385 (Fed. Cir. Oct. 30, 2008)).

For at least the reasons explained above, each of claims 3 and 4 defines patent-eligible subject matter and therefore the rejection of these claims under 35 U.S.C. § 101 should be withdrawn.

B. Claim 8

Claim 8 depends from independent claim 7, which has been amended and defines patent-eligible subject matter because it recites structural elements (e.g., a tangible memory and a

processor; see, e.g., ¶¶ 37 and 38). For at least this reason, the rejection of claim 8 under 35 U.S.C. § 101 now should be withdrawn.

Claim 8 has not been rejected on any basis other than under 35 U.S.C. § 101. Therefore, claim 8 now should be allowable.

C. Claims 10 and 11

Each of claims 10 and 11 depends from independent claim 9, which defines patent-eligible subject matter because it recites an apparatus that comprises a structural element (a processor, see, e.g., ¶¶ 37 and 38). For at least this reason, the rejection of claims 10 and 11 under 35 U.S.C. § 101 should be withdrawn.

D. Claims 15-20 and 24

Independent claim 15 has been amended to recite a machine-readable memory. There is no reasonable basis on which the Examiner can distinguish a “machine-readable medium” from a “computer-readable medium” in a way that would affect the patent-eligibility of claim 15 under 35 U.S.C. § 101.

Claims 14-20 and 24 depend from claim 15. Therefore each of the claims 14-20 and 24 is directed to patent-eligible subject matter for at least the same reasons explained above in connection with independent claim 15.

Claim 17 has not been rejected on any basis other than under 35 U.S.C. § 101. Therefore, claim 17 now should be allowable.

III. Claim rejections under 35 U.S.C. § 102

The Examiner has rejected claims 1, 2, 4, 6, 7, 9, 11, 13, 14, 21, 23, and 25 under 35 U.S.C. § 102(b) over Kumar (“On the Phase Response of the Error Diffusion Filter for Image Halftoning”).

A. Claims 1, 2, 4, 6 and 23

Independent claim 1 recites:

Claim 1 (currently amended): An error diffusion halftoning method comprising operating a processor to perform operations comprising:

modifying a current input to produce a modified input, wherein the modifying comprises incorporating past quantization errors into the current input;

quantizing the modified input to produce an output; and

processing the output through a data processing path having a bandpass transfer characteristic, wherein the processing comprises deriving an error value from the modified input and the output and diffusing the error value into future inputs.

The rejection of independent claim 1 under 35 U.S.C. § 102(b) over Kumar should be withdrawn because Kumar does not expressly nor inherently disclose each and every element of the claim. For example, Kumar does not expressly nor inherently disclose "processing the output through a data processing path having a bandpass transfer characteristic."

In the rationale given by the Examiner in support of the rejection of claim 1, the Examiner has asserted that Kumar discloses "processing the output through a data processing path having a bandpass transfer characteristic" in FIG. 1 and in the third paragraph on page 1285. Contrary to the Examiner's assertion, however, Kumar does not even hint that the error filter $h(k,l)$ has a bandpass transfer characteristic. Instead, Kumar consistently discloses that the error filter $h(k,l)$ is a low-pass filter.

For example, in the first line after equation (11) on page 1284, Kumar discloses that $(1-H(w_x, w_y))$ is a high-pass filter, which means that $H(w_x, w_y)$ is a low-pass filter. Kumar also discloses that "if the magnitude response of the error filter is low-pass with unity gain as zero frequency, it ensures that the low frequency spectrum of the halftone is similar to that of the input image" (page 1284, last two lines - page 1285, line 2). In addition, Kumar discloses that the three error filters defined in equations (12)-(14) are low-pass filters (see page 1285, first full ¶).

In the disclosure relied upon by the Examiner (i.e., the third paragraph on page 1285), Kumar expressly discloses that "It is only desired that the magnitude response should be a lowpass, preferably with its pass band not less than the passband of the human visual system" (emphasis added). Thus, the cited disclosure expressly contradicts the Examiner's

characterization of the disclosure as teaching “processing the output through a data processing path having a bandpass transfer characteristic.”¹

Thus, the Examiner has not shown that Kumar discloses “processing the output through a data processing path having a bandpass transfer characteristic,” as recited in claim 1. For at least this reason, the rejection of independent claim 1 under 35 U.S.C. § 102(b) over Kumar should be withdrawn.

Each of claims 2, 4, 6, and 23 incorporates the elements of independent claim 1 and therefore is patentable over Kumar for at least the same reasons explained above in connection with independent claim 1.

B. Claim 7

Independent claim 7 recites elements that essentially track the pertinent elements of independent claim 1 discussed above. Therefore, independent claim 7 is patentable over Kumar for at least the same reasons explained above in connection with independent claim 1.

C. Claims 9, 11, 13, and 14

Independent claim 9 recites elements that essentially track the pertinent elements of independent claim 1 discussed above. Therefore, independent claim 9 is patentable over Kumar for at least the same reasons explained above in connection with independent claim 1.

Each of claims 11, 13, and 14 incorporates the elements of independent claim 9 and therefore is patentable over Kumar for at least the same reasons explained above in connection with independent claim 9 (via claim 1).

¹ Inexplicably, the Examiner's characterization of the cited disclosure omitted the part of the cited sentence that expressly contradicts the Examiner's characterization. In particular, the Examiner omitted Kumar's express teachings that “It is only desired that the magnitude response should be a lowpass...”

D. Claims 21 and 25

Independent claim 21 recites elements that essentially track the pertinent elements of independent claim 1 discussed above. Therefore, independent claim 21 is patentable over Kumar for at least the same reasons explained above in connection with independent claim 1.

Claim 25 incorporates the elements of independent claim 21 and therefore is patentable over Kumar for at least the same reasons explained above in connection with independent claim 21 (via claim 1).

IV. Claim rejections under 35 U.S.C. § 103

The Examiner has rejected claims 5, 12, 15, 16, 18-20, 22, and 24 under 35 U.S.C. § 102(b) over Kumar ("On the Phase Response of the Error Diffusion Filter for Image Half toning") in view of Shimizu (U.S. 6,999,201).

A. Claims 5 and 22

Each of claims 5 and 22 incorporates the elements of independent claim 1. Shimizu does not make-up for the failure of Kumar to disclose or suggest the pertinent elements of independent claim 1 discussed above. Therefore, claims 5 and 22 are patentable over Kumar in view of Shimizu for at least the same reasons explained above in connection with independent claim 1.

B. Claim 12

Claim 12 incorporates the elements of independent claim 9. Shimizu does not make-up for the failure of Kumar to disclose or suggest the pertinent elements of independent claim 9 discussed above (via claim 1). Therefore, claim 12 is patentable over Kumar in view of Shimizu for at least the same reasons explained above in connection with independent claim 9 (via claim 1).

C. Claims 15, 16, 18-20, and 24

Independent claim 15 recites elements that essentially track the pertinent elements of independent claim 1 discussed above. Shimizu does not make-up for the failure of Kumar to disclose or suggest the pertinent elements of independent claim 1 discussed above. Therefore, independent claim 15 is patentable over Kumar in view of Shimizu for at least the same reasons explained above in connection with independent claim 1.

Each of claims 16, 18-20, and 24 incorporates the elements of independent 15 and therefore is patentable over Kumar in view of Shimizu for at least the same reasons explained above in connection with independent claim 15.

V. Conclusion

For the reasons explained above, all of the pending claims are now in condition for allowance and should be allowed.

Charge any excess fees or apply any credits to Deposit Account No. 08-2025.

Respectfully submitted,

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/Edouard Garcia, Reg. No. 38,461/
Edouard Garcia
Reg. No. 38,461
Telephone No.: (650) 965-8342

Please direct all correspondence to:

Hewlett-Packard Company
Intellectual Property Administration
Legal Department, M/S 35
P.O. Box 272400
Fort Collins, CO 80528-9599